



THE OPEN UNIVERSITY OF SRI LANKA

POSTGRADUATE DIPLOMA IN ENVIRONMENTAL SCIENCES

LEVEL 7

NEP2203 – INDUSTRIAL AND URBAN ENVIRONMENTAL HAZARDS

FINAL EXAMINATION – 2007 (OPEN BOOK EXAMINATION)

DURATION: THREE HOURS

Date: 07th November 2007

Time: 09.30 a. m. – 12.30 p.m.

ANSWER ANY FOUR (04) QUESTIONS ONLY

1. Why is thermal comfort important for the industrial worker?
Describe some of the control measures you could adopt to ensure this.
2. What are the water sources in Sri Lanka and how could they be contaminated?
3. *The following extract on organic farming challenges the accepted concepts and gives an alternative view of conventional farming.*

“Swiss scientists at the Research Institute for Organic Agriculture have just published a 21 – year study in Science comparing two types of organic farming with two types of conventional agriculture. The results initially seem to back up those consumer beliefs, and the press has described the research as showing that organic farms are “viable”.

Organic farming boils down to essentially two principles: Soluble mineral inputs, such as artificial nitrogen fertilizer, are forbidden, and so is the use of synthetic herbicides and pesticides. To these original principles, organic farmers’ organizations have recently proscribed growing genetically enhanced crops.

One of the most frequent criticisms of organic agriculture is that it is not as productive as conventional farming. The Swiss scientists confirmed this: Their organic plots were on average 20 percent less productive than conventional plots. For potatoes, organic production was about 40 percent lower.

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The researchers also point out that "cereal crop yields in Europe typically are 60 to 70% of those under conventional management". Furthermore, they dispelled the notion that organic crops are superior food by noting, "There were minor differences between the farming systems in food quality."

The Swiss scientists based their claims for greater organic "efficiency" chiefly on the differences in the amount of energy used to produce the crops. Since the same horticultural techniques were used on both conventional and organic plots, the difference in energy use was mostly the result of counting the energy used to produce inorganic fertilizers and pesticides. On this basis, the researchers claim in their Science article that organic farms use about 50 percent less energy. However, looking at the fine print, one discovers that "since crop yields were considerably higher in the conventional systems, the difference in energy needed to produce a crop unit was only 19 percent lower in the organic systems."

Secondly, the researchers declare that they found nutrients "in the organic systems to be 34 to 51% lower than in conventional systems, whereas mean crop yield was only 20% lower over a period of 21 years." But - to ask the organic advocates' own question - is organic agriculture sustainable over the long run? Again, the fine print says no. As their research confirms, organic farming is mining the soil of its vital minerals, particularly phosphorus and potassium. Eventually, as these minerals are used up, organic crop production will fall below its already low level. Conventional farming, on the other hand, restores mineral balances through fertilization."

From an environmental point of view, give an answer to this question posed. "Is organic agriculture sustainable over the long-run?" Base your answer on issues raised in Session - 3 of Unit II (Industrial & Urban Environmental Hazards)

4. Selecting either Tea Industry or Rubber Industry in Sri Lanka, comment on each of the below aspects briefly.
 - a) The Industry that has a greater impact on the environment during the vegetative phase. (25 marks)
 - b) The Industry that has a greater impact on the environment during the processing. (25 marks)
 - c) Soil conservation measures that could be implemented in Tea and Rubber plantation. (25 marks)
 - d) Contribution of Rubber plantations for the protection of natural forests. (25 marks)

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5. a) Discuss the importance of Rubber plantation for the economy of Sri Lanka. (50 marks)
- b) "Tea plantations are responsible for soil erosion in the up country"
Comment on this statement and write a brief account on soil conservation practices. (50 marks)

6. *Visual Pollution can be described as degradation of the quality of the composition of the visual environment.*

- a) When aesthetics of the composition of the visual environment are considered, certain fundamental characteristics are important.
Describe these characteristics. (15 marks)
- (b) Describe the different ways in which the composition of the visual environment can be degraded. (15 marks)
- (c) Name different visual elements that pollute the visual environment, and describe how they pollute the visual environment. (20 marks)
- (d) Discuss your experience about visual pollution with examples. (25 marks)
- (e) Suggest some measure to control visual pollution. (25 marks)

